

Abstract of the Disclosure

The subject invention pertains to a method and apparatus for generation and/or delivery of x-ray irradiation. In a specific embodiment, the subject invention can be used to deliver x-ray irradiation to an artery in order to prevent restenosis in the artery. For example, a short pulse laser generated ionizing dose of x-ray irradiation can be effectively delivered to the arterial wall using hollow waveguides. The delivery of such a dose can help to prevent restenosis. The use of short pulse x-rays can allow energy to be precisely delivered, and can reduce diffusion of the energy to nearby normal tissue during the exposure. Compared to radiation in the visible wavelength range, the absorption of radiation in the x-ray region by surrounding tissues can be much lower. In a specific embodiment, the arterial walls can be irradiated from a cylindrical or conical symmetric mirrored reflective end tip mounted on the end of a hollow waveguide. The technique can allow the irradiation wavelength to be modulated to achieve a dose which can inhibit plaque growth, instead of limiting the irradiation wavelength based on the maximum voltage the cable can withstand. The subject invention also pertains to a method and apparatus for delivery of x-ray radiation with respect to medical therapies such as tumor necrosis.